WHAT IS CLAIMED IS:

1. An apparatus, comprising:

a dielectric layer having a hole therethrough;

an electrically conductive layer disposed adjacent one side of said dielectric layer, said conductive layer having a recess therein which includes a balun portion and a slot portion, said slot portion communicating at one end with said balun portion, and said balun portion being aligned with said hole through said dielectric layer; and

an elongate conductive element which extends generally transversely with respect to said slot portion in the region of said one end thereof.

2. An apparatus according to Claim 1, wherein said hole through said dielectric layer has substantially the same size and shape as said balun portion of said recess in said conductive material.

3. An apparatus according to Claim 2, including a further conductive layer which has therein a further recess, said further recess including a further balun portion and including a further slot portion which communicates at one end with said further balun portion, said slot portions of said recesses being of similar size and shape and being substantially aligned with each other, and said further balun portion having substantially the same size and shape as, and being aligned with, said hole through said dielectric layer.

4. An apparatus according to Claim 3, including a conductive strip which extends along an edge of said hole in said dielectric layer, except in the region of said slot portions, and which is in electrical contact with each of said layers of conductive material.

5. An apparatus according to Claim 2,

including two further conductive layers, said conductive layers all being substantially parallel to each other;

including a further dielectric layer, said dielectric layers being substantially parallel to each other and to said conductive layers, and each said dielectric layer being disposed between a respective pair of said conductive layers;

wherein said further dielectric layer has therethrough a hole, said holes through said dielectric layers being of substantially the same size and shape, and being aligned with each other; and

wherein said further conductive layers each have therein a further recess, each said further recess including a further balun portion and including a further slot portion which communicates at one end with said further balun portion thereof, said slot portions in each of said conductive layers being of similar size and shape and being substantially aligned with each other, and said balun portions in each of said conductive layers being of similar size and shape and being aligned with each other and with said holes through said dielectric layers.

6. An apparatus according to Claim 5, including a conductive strip which extends along edges of said holes in said dielectric layers, except in the region of said slot portions of said conductive layers, and which is in electrical contact with each of said conductive layers.

7. An apparatus according to Claim 1, wherein said slot portion has edges on opposite sides thereof which each follow a predetermined curve other than a first-order exponential curve.

8. An apparatus according to Claim 7, wherein said predetermined curve for each said edge is configured to facilitate minimization of return loss for electromagnetic signals induced within said slot portion through said elongate conductive element.

9. An apparatus, comprising:

a conductive section having a recess which includes a balun portion and a slot portion, said slot portion communicating at one end with said balun portion, said balun portion having a shape which facilitates a large and abrupt discontinuity in impedance between said slot portion and said balun portion, said shape of said balun portion including said balun portion having an approximately straight side, said one end of said slot portion communicating with said balun portion at a location between the ends of said straight side of said balun portion; and

an elongate conductive element which extends generally transversely with respect to said slot portion in the region of said one end thereof, and which has in the region of said one end of said slot portion an end which is directly electrically coupled to said conductive section.

10. An apparatus according to Claim 9, wherein said balun portion has a shape which is approximately rectangular.

11. An apparatus according to Claim 10, wherein said balun portion has in a first direction generally parallel to said one end of said slot portion a dimension which is approximately one-quarter of a selected wavelength, and has in a second direction substantially perpendicular to said first direction a second dimension which is at least one-quarter of said selected wavelength and which is less than one-half of said selected wavelength.

12. An apparatus according to Claim 9, wherein said slot portion has edges on opposite sides thereof which each follow a predetermined curve other than a first-order exponential curve.

13. An apparatus according to Claim 12, wherein said predetermined curve for each said edge is configured to facilitate minimization of return loss for electromagnetic signals induced within said slot portion through said elongate conductive element.

14. An apparatus, comprising:

first and second dielectric layers which extend approximately parallel to each other;

first, second and third conductive layers which extend approximately parallel to each other and to said dielectric layers, said first dielectric layer being located between said first and second conductive layers, and said second dielectric layer being located between said second and third dielectric layers, said conductive layers each having therein a recess which includes a balun portion and a slot portion communicating at one end with the balun portion thereof, said slot portions in each of said conductive layers being of similar size and shape and being substantially aligned with each other, and said balun portions in each of said conductive layers being of similar size and shape and being aligned with each other;

a plurality of conductive vias which extend through openings in said dielectric layers to electrically couple said conductive layers to each other; and

an elongate conductive element which extends generally transversely with respect to said slot portion in the region of said one end thereof.

15. An apparatus according to Claim 14, wherein said elongate conductive element is provided between said first and second dielectric layers, and has an end portion which extends across said slot portion of said second conductive layer and is directly electrically connected to said second conductive layer at said one end of said slot portion therein.

16. An apparatus according to Claim 15, wherein said second conductive layer has an elongate further recess therein which communicates at one end with said slot portion, and wherein said elongate conductive element extends through said further recess.

17. A method, comprising the steps of:

creating a hole through a dielectric layer;

fabricating an electrically conductive layer adjacent one side of said dielectric layer, said conductive layer having a recess therein which includes a balun portion and a slot portion, said slot portion communicating at one end with said balun portion, and said balun portion being aligned with said hole through said dielectric layer; and

forming an elongate conductive element which extends generally transversely with respect to said slot portion in the region of said one end thereof.

18. A method according to Claim 17, wherein said creating step is carried out so that said hole through said dielectric layer has substantially the same size and shape as said balun portion of said recess in said conductive material.

19. A method according to Claim 18, including the step of fabricating a further conductive layer which has therein a further recess, said further recess including a further balun portion and including a further slot portion which communicates at one end with said further balun portion, said slot portions of said recesses being of similar size and shape and being substantially aligned with each other, and said further balun portion having substantially the same size and shape as, and being aligned with, said hole through said dielectric layer.

20. A method according to Claim 19, including the step of fabricating a conductive strip which extends along an edge of said hole in said dielectric layer, except in the region of said slot portions, and which is in electrical contact with each of said layers of conductive material.

21. A method, comprising the steps of:

creating in a conductive section a recess which includes a balun portion and a slot portion, said slot portion communicating at one end with said balun portion, said balun portion having a shape which facilitates a large and abrupt discontinuity in impedance between said slot portion and said balun portion, said shape of said balun portion including said balun portion having an approximately straight side, said one end of said slot portion communicating with said balun portion at a location between the ends of said straight side of said balun portion; and

fabricating an elongate conductive element which extends generally transversely with respect to said slot portion in the region of said one end thereof, and which has in the region of said one end of said slot portion an end which is directly electrically coupled to said conductive section.

22. A method according to Claim 21, wherein creating step is carried out in a manner so that said balun portion has a shape which is approximately rectangular.

23. A method according to Claim 22, wherein said creating step is carried out so that said balun portion has in a first direction generally parallel to said one end of said slot portion a dimension which is approximately one-quarter of a selected wavelength, and has in a second direction substantially perpendicular to said first direction a second dimension which is at least one-quarter of said selected wavelength and which is less than one-half of said selected wavelength.

24. A method, comprising the steps of:

providing first and second dielectric layers which extend approximately parallel to each other;

fabricating first, second and third conductive layers which extend approximately parallel to each other and to said dielectric layers, said first dielectric layer being located between said first and second conductive layers, and said second dielectric layer being located between said second and third dielectric layers;

forming in each of said conductive layers a respective recess which includes a balun portion and a slot portion communicating at one end with the balun portion thereof, said slot portions in each of said conductive layers being of similar size and shape and being substantially aligned with each other, and said balun portions in each of said conductive layers being of similar size and shape and being aligned with each other;

forming a plurality of conductive vias which extend through openings in said dielectric layers to electrically couple said conductive layers to each other; and

fabricating an elongate conductive element which extends generally transversely with respect to said slot portion in the region of said one end thereof.

25. A method according to Claim 24, wherein said fabricating step is carried out in a manner so that said elongate conductive element is disposed between said first and second dielectric layers, and has an end portion which extends across said slot portion of said second conductive layer and is directly electrically connected to said second conductive layer at said one end of said slot portion therein.